REMARKS

The Office Action dated April 2, 2009, has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Status of the Claims

Claims 7, 8, 14, 15, 18, 19-22, 26-28, 32, 39, 40, 42-47, 50-52, 55-57, 59, 62 and 63 have been amended to more particularly point out and distinctly claim the subject matter of the invention. No new matter has been added. Claims 1, 3, 4, 7-9, 13-16 and 18-65 are currently pending in the application and are respectfully submitted for consideration.

Rejection under 35 U.S.C. § 101

On page 2, the Office Action rejected claims 31, 32, 44, 50 and 56 under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter. Specifically, the Office Action alleged that "the claims are directed to a computer program product (computer program, per se) and are not statutory subject matter." Applicants respectfully traverse the rejection.

While the Office Action alleged that the claims are directed to software *per se*, this view is impermissible in light of the fact that the claims must be read as a whole and further, the format of these claims is explicitly endorsed by MPEP § 2106.01. The preambles of claims 31, 32, 44, 50 and 56 recite a computer program embodied on a computer-readable medium. The claims further recite that the program controls a

processor. As such, the claims do not merely recite software *per se*, but rather an **interrelation** of software, storage and hardware that, when combined, cause a machine or manufacture (namely, the processor) to perform a useful process. MPEP § 2106.01 states that "[w]hen functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized." "When a computer program is recited in conjunction with a physical structure, such as a computer memory, USPTO personnel **should treat the claim as a product claim**" (MPEP § 2106.01(I), emphasis added). The recitation of a computer-readable medium and a processor forces this interpretation. As such, the claims recite statutory subject matter in accordance with the MPEP and 35 U.S.C. § 101 and fall under the statutory category of a product. Applicants further note that it is impermissible for the Examining corps to take positions that are contrary to the MPEP and since the claims comply with MPEP § 2106.01, the claims are in a form clearly endorsed by the USPTO and the rejection must be withdrawn.

Accordingly, it is respectfully submitted that the rejection is overcome and respectfully requested that the rejection be withdrawn.

Rejection under 35 U.S.C. § 112

On pages 2 and 3, the Office Action rejected claims 31, 32, 44, 50 and 56 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the enablement requirement. Specifically, the Office Action alleged on page 3 that "the limitation 'A

computer embodied on a computer readable storage medium' was claimed. No support for this feature could be found in the original specification." Applicants concur that it would seem rather difficult to have a computer embodied on a subcomponent thereof, such as a computer readable medium, but presumably this is not what the Office Action intended to state. Rather, Applicants presume that the statement in the Office Action should read a "computer program" rather than a computer. Nonetheless, this rejection is still improper for a number of reasons and Applicants respectfully traverse the rejection.

Applicants respectfully note that the standard for enablement is not whether something is explicitly stated in the specification. Rather, MPEP § 2164.01 states that "[a]ny analysis of whether a particular claim is supported by the disclosure in an application requires a determination of whether that disclosure, when filed, contained sufficient information regarding the subject matter of the claims as to enable **one skilled in the pertinent art** to make and use the claimed invention" (emphasis added). In other words, the test is "is the experimentation needed to practice the invention undue or unreasonable" by such a person (see *Id.*). The factors for making a determination of undue experimentation include, but are not limited to:

(A) The breadth of the claims;
(B) The nature of the invention;
(C) The state of the prior art;
(D) The level of one of ordinary skill;
(E) The level of predictability in the art;
(F) The amount of direction provided by the inventor;
(G) The existence of working examples; and
(H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

(See MPEP § 2164.01(a)). Applicant notes that these factors have not been considered on the record and as such, the Office Action did not make a *prima facie* case for alleged lack of enablement. Applicants cannot envision a case in systems that perform uplink scheduling for packet based data traffic where such a rigorous test could be met since practical embodiments of these systems generally use software, at least in part.

Further, Applicants respectfully submit that use of a computer program embodied on a computer readable medium is indeed supported by the present specification. The present specification and figures discuss mobile stations and base stations. Both of these devices are well known are known to have both software and memory. Further, software may offer certain clear benefits over hardwired solutions, such as updatability.

Thus, Applicants submit that it would be extremely difficult to find production versions of mobile stations or base stations that lack software. While it is possible to implement the logic of some embodiments of the present invention in hardware alone, Applicants respectfully submit that a person of ordinary skill in the art would readily understand that software can also be used. Applicants do not believe that a person who fails to understand that such devices can carry out functionality using software would qualify as a person of ordinary skill in the art in this case. In fact, Applicants respectfully submit that in modern networking systems, the position that a person of ordinary skill in the art would not understand that the service features of such a system may be performed by software, and further that software is generally stored on some storage medium

readable by a computer, is simply untenable. For instance, Applicants submit that it would be rather difficult to find **any** person who did not believe that their cell phone operated with the aid of software and memory, let alone a person of ordinary skill in the art of network communications.

Further, Applicants respectfully submit that the enablement rejection under 35 U.S.C. § 112, first paragraph, and the obviousness rejections under 35 U.S.C. § 103 present incompatible, and antithetical, levels of skill for a person of ordinary skill in the art. With respect to the rejection under 35 U.S.C. § 112, the Office Action has applied a person of ordinary skill who would not understand from the discussion of a network system in the present specification, including architectural diagrams and discussion of devices such as mobile stations and base stations, that some embodiments of the present invention may be realized via software embodied on a computer-readable medium. On the other hand, the rejections under 35 U.S.C. § 103 employ a person who is allegedly able to understand, combine and apply disparate communications patents to allegedly achieve the features recited in the claims. These are two different standards of skill that cannot be reconciled in the same Action. If the rejection under 35 U.S.C. § 112, first paragraph, were to be maintained (which is clearly improper since the POSA standard that was applied is clearly incorrect), the rejections under 35 U.S.C. § 103 would all have to be withdrawn as these cannot exist in the same Office Action with the written description rejection.

Accordingly, it is respectfully submitted that the rejection is overcome and respectfully requested that the rejection be withdrawn.

Rejection under 35 U.S.C. § 103

Claims 1, 3, 4, 7-9, 13-16 and 18-65 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Cudak et al. (U.S. Patent No. 6,359,898) in view of Tiedemann et al. (U.S. Patent No. 5,914,950). The Office Action took the position on pages 3-27 that the combination of Cudak et al. and Tiedemann et al. teaches all of the features of the rejected claims. Applicants respectfully traverse the rejection. Reconsideration of the claims is respectfully requested.

Independent claim 1, from which claims 3, 4, 7, 16 and 58 depend, recites a method including monitoring a length of a data queue in a first network element as an indication of future need of communication resources in the first network element. The indication includes a coded value of the length of the data queue in the first network element and the length of the data queue is embedded in a data block from the first network element. The method also includes allocating the communications resources for a transmission between the first network element and a second network element based on the indication.

Independent claim 8, from which claims 9 and 13 depend, recites a system including a plurality of first stations, a second station connected to the plurality of first stations through a plurality of communication links and a controller configured to control allocation of the communication resources among the communication links. The

controller is separate and independent from the first stations. The allocation is performed in accordance with information transmitted from each of the first stations. The information from each of the first stations includes a data block embedding a coded value of a length of a data queue in each of the first stations. The controller is configured to use the length of a data queue is an indication of future need of communication resources for each of the first stations.

Independent claim 14, from which claims 18, 26-28 and 59 depend, recites an apparatus including a controller configured to control allocation of communication resources for a mobile station. The allocation is based upon queue length information received from the mobile station that is embedded in a data block. The controller is also configured to use the queue length information as an indication of future need of communication resources for the mobile station

Independent claim 15, from which claims 19, 29, 30 and 60 depend, recites an apparatus including a processor configured to encode a code representative of a length of a data queue embedded in a data block and transmit data packets and the data block with the code included in the data block as a field to a network element. The length of the data queue is used by the network element as an indication of future need of communication resources for the apparatus.

Independent claim 20 recites an apparatus including decoder means for decoding a code representative of a length of a data queue in a mobile station. The length of the data queue is embedded in a data block from the mobile station. The apparatus also includes

controller means for controlling allocation of communication resources. The decoder means is configured to decode and provide queue length information for the mobile station to the controller means. The controller means is configured to use the queue length information as an indication of future need of communication resources for the mobile station.

Independent claim 21 recites an apparatus including data queue means for receiving data packets and encoder means for encoding a code representative of a length of the data queue means. The encoder means is configured to embed the length of the data queue in a data block. The apparatus also includes transmitter means for transmitting the data packets and the data block to a network element. The code is included in the data block as a field. The length of the data queue is used by the network element as an indication of future need of communication resources for the apparatus

Independent claim 22, from which claims 23-25 and 61 depend, recites a method including encoding a code representative of a length of a data queue in a first network element. The length of the data queue is embedded in a data block and the data queue is configured to receive the data block. The method also includes transmitting data packets including a field including the code to a second network element. The code is used when allocating communication resources for a transmission between the first network element and the second network element. The length of the data queue is used by the second network element as an indication of future need of communication resources in the first network element.

Independent claim 31 recites a computer program embodied on a computer-readable storage medium configured to control a processor to perform a process, including monitoring a length of a data queue in a first network element as an indication of future need of communication resources in the first network element. The indication includes a coded value of a length of a data queue in the first network element and the length of the data queue is embedded in a data block from the first network element. The process also includes allocating the communications resources for a transmission between the first network element and a second network element based on the indication.

Independent claim 32 recites a computer program embodied on a computer-readable storage medium configured to control a processor to perform a process, including encoding a code representative of a length of a data queue in a first network element. The data queue is configured to receive data and the length of the data queue is embedded in a data block from the first network element. The process also includes transmitting data packets including a field including the code to a second network element. The code is used when allocating communication resources for a transmission between the first network element and the second network element. The length of the data queue is used by the second network element as an indication of future need of communication resources in the first network element.

Independent claim 33, from which claims 34-37 and 62 depend, recites an apparatus including a processor configured to monitor a length of a data queue in a first network element as an indication of future need of communication resources in the first

network element. The indication includes a coded value of the length of the data queue in the first network element and the length of the data queue is embedded in a data block from the first network element. The processor is also configured to allocate the communications resources for a transmission between the first network element and the apparatus based on the indication.

Independent claim 38 recites an apparatus including monitoring means for monitoring a length of a data queue in a first network element as an indication of future need of communication resources in the first network element. The indication includes a coded value of the length of the data queue in the first network element and the length of the data queue is embedded in a data block from the first network element. The apparatus also includes allocating means for allocating the communications resources for a transmission between the first network element and the apparatus based on the indication.

Independent claim 39, from which claims 40-43 and 63 depend, recites a method including controlling allocation of communication resources for a mobile station by a controller. The allocation is based upon queue length information received from the mobile station that is embedded in a data block. The method also includes using, by the controller, the queue length information as an indication of future need of communication resources for the mobile station.

Independent claim 45 recites an apparatus including controlling means for controlling allocation of communication resources for a mobile station and allocating

means for performing the allocation based upon queue length information received from the mobile station that is embedded in a data block. The allocating means is configured to use the queue length information as an indication of future need of communication resources for the mobile station.

Independent claim 46, from which claims 47-49 and 64 depend, recites a method including encoding a code representative of a length of a data queue embedded in a data block in a first network element and transmitting data packets and the data block with the code included in the data block as a field to a second network element. The length of the data queue is used by the second network element as an indication of future need of communication resources for the first network element.

Independent claim 50 recites a computer program embodied on a computer-readable storage medium configured to control a processor to perform a process, including encoding a code representative of a length of a data queue embedded in a data block by a first network element and transmitting data packets and the data block with the code included in the data block as a field to a second network element. The length of the data queue is used by the second network element as an indication of future need of communication resources for the first network element.

Independent claim 51 recites an apparatus including encoding means for encoding a code representative of a length of a data queue embedded in a data block and transmitting means for transmitting data packets and the data block with the code included in the data block as a field to a network element. The length of the data queue is

used by the network element as an indication of future need of communication resources for the apparatus.

Independent claim 52, from which claims 53-55 and 65 depend, recites an apparatus including a processor configured to encode a code representative of a length of a data queue in the apparatus. The length of the data queue is embedded in a data block and the data queue is configured to receive the data block. The processor is also configured to transmit data packets including a field including the code to a network element. The code is used when allocating communication resources for a transmission between the apparatus and the network element. The length of the data queue is used by the network element as an indication of future need of communication resources for the apparatus.

Independent claim 56 recites a computer program embodied on a computer-readable storage medium configured to control a processor to perform a process, including encoding a code representative of a length of a data queue in a first network element. The length of the data queue is embedded in a data block and the data queue is configured to receive the data block. The process also includes transmitting data packets including a field including the code. The code is used when allocating communication resources for a transmission between the first network element and a second network element. The length of the data queue is used by the second network element as an indication of future need of communication resources for the first network element

Independent claim 57 recites an apparatus including encoding means for encoding a code representative of a length of a data queue in the apparatus. The length of the data queue is embedded in a data block and the data queue is configured to receive the data block. The apparatus also includes transmitting means for transmitting data packets including a field including the code to a network element. The code is used when allocating communication resources for a transmission between the apparatus and the network element. The length of the data queue is used by the network element as an indication of future need of communication resources for the apparatus

As will be discussed below, Cudak et al. and Tiedemann et al., both individually and in combination, fail to teach or suggest all of the features of the presently pending claims.

Cudak et al. generally discusses "early determination of a transmission block count which allows subsequent quick release of the transmission resources" (column 1, lines 11-13). Cudak et al.

> operates in a time division multiple access wireless communication system such as a GSM system. Packet data logical channels are supported by a radio subsystem in accordance with the GSM Technical Specification "Project Scheduling and Open Issues" GSM 10.60. A new Countdown Value (CV) field is proposed for inclusion within the Radio Link Control (RLC) Data Block header, utilizing the bits of the Power Control (PC) field. The PC function is not utilized for blocks transmitted on the uplink.

(Column 1, lines 56-65).

Tiedemann et al. generally discusses a "method and apparatus for reverse link rate scheduling in a communication system having a variable data transmission rate" (column 1, lines 9-11).

> During a communication with a cell, each remote station can transmit unscheduled transmissions at rates up to a maximum unscheduled transmission rate over the reverse link. In accordance with IS-95A, the maximum unscheduled transmission rate is 28.8 Kbps. The unscheduled transmissions can be used to send small amounts of data and control messages without the additional delay caused by scheduling. Additionally, each remote station can be assigned a maximum scheduled transmission rate which can be higher than the maximum unscheduled transmission rate. In the [alleged] present invention, a channel scheduler determines the maximum scheduled transmission rate for high speed data transmission. The maximum scheduled transmission rate is assigned at each scheduling period according to the availability of the reverse link capacity.

(Column 4, lines 45-59, of Tiedemann et al.).

Independent claim 1 recites, in part, "monitoring a length of a data queue in a first network element as an indication of future need of communication resources in the first network element". Independent claims 8, 14, 15, 20-22, 31-33, 38, 39, 44-46, 50-52, 56 and 57, which each have their own scope, recite similar features. The Office Action took the position on page 4 that Fig. 1, column 2, lines 24-29, and column 3, lines 52-54, of Cudak et al. disclose these features. However, this is not the case, as will be demonstrated below.

Cudak et al. discusses that "Table I shows results when utilizing a three-bit countdown field. The corresponding results for the final column with a four-bit countdown field are within 1% of those shown" (column 3, lines 52-54). "An iterative

routine is entered at step 110, and as shown at step 112, the CV can be computed during the segmentation operation, just as the current method allows. For a single-slot MS, the CV is equivalent to a method counting down the discrete number of remaining blocks, since in that case the number of blocks is the same as the block frame estimate" (column 2, lines 24-29, of Cudak et al.). In other words, an iterative method is used to transfer the remaining blocks. This is not the same as an indication of future need for resources that are going to be used as **an indication for allocation of the resources**, as claimed.

As discussed in the present specification, a problem that may exist in some networks is that "real time traffic such as video conference has unpredictable fluctuations in the data rate. Thus, any delay in adjusting the resources may mean that a link to a mobile station may not always have data in its transmission queue" (see, for example, page 2, lines 9-11). In some embodiments, a plurality of bits may be used "in each data segment to describe the size of one of the queues in that mobile station. Once this is received in the base station, additional resources can be allocated if necessary" (see, for example, page 3, lines 16-18, of the present application). While Cudak et al. may include a countdown value in a block, this is presumably done to prevent a network from continuing to allocate blocks to a mobile station that has already completed its transmission when several time slots are being utilized to provide a network with advance warning of the impending completion of the packet transmission (see column 1, lines 28-43, and column 2, lines 24-35). Note that resource allocation occurs in step 104 of Fig. 1 of Cudak et al. and no indication of future need for resources is provided anywhere in

Cudak et al. Rather, Cudak et al. merely focuses on "quick" release of transmission resources. Thus, Cudak et al. does not use a length of a data queue as an indication of a future need for resources and is completely silent as to these claimed features.

Applicants also respectfully submit that the combination of Cudak et al. and Tiedemann et al. is improper. Tiedemann et al. discusses that the queue size of all scheduled tasks is sent to a channel scheduler so that the channel scheduler will perform certain actions based on that information (see column 21, lines 49-67). Applicants respectfully submit that it would not be obvious to one of ordinary skill in the art to modify Cudak et al. with the features of Tiedemann et al. since **the combination will not work**. Specifically, Applicants submit that one would not get the information transmitted in Tiedemann et al. using a countdown value since this would not work in the centralized and distributed configuration of the Tiedemann et al. algorithm. Also, such a combination would not have the technical effect that a transmission (MS-BSS) of the queue length would be done for every TDMA frame and piggybacked in an RLC/MAC block using the CV header field (see columns 26-28 of Tiedemann et al.). Applicants respectfully submit that a combination cannot be proper where features of a cited art document are frustrated or rendered inoperable.

Claims 3, 4, 7, 9, 13, 16, 18, 19, 23-30, 34-37, 40-44, 47-49, 53-55 and 58-65 depend from independent claims 1, 8, 14, 15, 22, 33, 39, 46 or 52 and add further features thereto. Thus, the arguments above with respect to the independent claims also apply to the dependent claims.

Per the above, Cudak et al. and Tiedemann et al., both individually and in combination, fail to teach or suggest all of the features of the above-rejected claims under 35 U.S.C. § 103(a). Accordingly, it is respectfully submitted that the rejection is overcome and respectfully requested that the rejection be withdrawn.

Conclusion

For at least the reasons presented above, it is respectfully submitted that claims 1, 3, 4, 7-9, 13-16 and 18-65, comprising all of the currently pending claims, patentably distinguish over the cited art. Accordingly, it is respectfully requested that the claims be allowed and the application be passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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